

IN THE CLAIMS

Please amend the claims as follows:

Claim 1 (Canceled).

Claim 2 (Currently Amended): The roll crusher assembly defined in claim [[1]]19 wherein the hard facing material includes any one of:

[[a)]] iron-based alloys containing one or more of the following alloying elements: chromium, manganese, silicon, tungsten, molybdenum, nickel, and vanadium;

[[b)]] alloys based on one or more of chromium, nickel, cobalt and tungsten; and

[[c)]] composite materials containing particles of hard materials dispersed in a continuous matrix.

Claim 3 (Currently Amended): The roll crusher assembly defined in claim [[1]]19 or claim 2, wherein the means for depositing the hard facing material ~~deposition means~~ includes a welding means.

Claim 4 (Currently Amended): The roll crusher assembly defined in claim [[1]]19 or claim 2, wherein the means for depositing the hard facing material ~~deposition means~~ ~~including~~ includes a welding means that is positioned in relation to the roll or rolls to deposit the hard facing material onto the surface of the roll or rolls as the roll or rolls rotate during the crushing operation.

Claim 5 (Currently Amended): The roll crusher assembly defined in claim 3, wherein the welding means is an arc welding assembly.

Claim 6 (Currently Amended): The roll crusher assembly defined in claim [[1]] 19, wherein the hard facing material deposition means is ~~operable~~ configured to deposit a continuous layer of the hard facing material onto the surface of the roll or rolls.

Claim 7 (Currently Amended): The roll crusher assembly defined in claim [[1]] 19, wherein the hard facing deposition means is ~~operable~~ configured to deposit the hard facing material onto the surface of the roll or rolls only on those sections of the roll or rolls that have become worn to the extent that repair is necessary.

Claim 8 (Currently Amended): The roll crusher assembly defined in claim [[1]] 19, wherein the roll or rolls are ~~of the order of~~ 1-3m in diameter.

Claim 9 (Currently Amended): The roll crusher assembly defined in claim [[1]] 19, further comprising: ~~includes~~
a pair of contra-rotating rolls that have a gap therebetween, and
a means for varying the gap whereby absolute precision is not necessary ~~in respect of~~
~~the~~ with respect to a thickness of the hard facing material on the surfaces of the rolls, wherein
~~and the main requirement is that~~ all of the roll surfaces that require protection [[be]]
are protected by the hard facing material, and
~~there is not~~ an excessive build up of material over time is precluded.

Claim 10 (Canceled).

Claim 11 (Currently Amended): The roll crusher assembly defined in claim [[1]] 19, wherein the roll surface monitoring means ~~is adapted to determine~~ determines the extent of wear on the surface of the roll or rolls.

Claims 12-13 (Canceled).

Claim 14 (Currently Amended): The roll crusher assembly defined in claim ~~[[10]]~~ 19, wherein

the hard facing deposition means ~~includes a means that~~ is responsive to the roll surface monitoring means and ~~can actuate~~ actuates the hard facing deposition means to deposit the hard facing material onto ~~[[the]]~~ worn sections of the roll or rolls.

Claim 15 (Currently Amended): The roll crusher assembly defined in claim ~~[[1]]~~ 19, ~~includes further comprising:~~

a means for cleaning the surface of the rotating roll or rolls upstream of the hard facing deposition means in ~~[[the]]~~ a direction of rotation of the roll or rolls.

Claims 16-17 (Canceled).

Claim 18 (Currently Amended): ~~The method defined in~~ A method of repairing a roll or rolls of the roll crush assembly according to claim ~~[[17]]~~19, comprising: ~~includes~~

monitoring the surface of the roll or rolls, ~~[[and]]~~

determining ~~[[the]]~~ an extent of wear on the surface of the roll or rolls, ~~[[and]]~~

identifying worn sections of the roll or rolls, and

depositing the hard facing material onto the worn roll sections.

Claim 19 (Currently Amended): A roll crusher assembly for use in the mining industry, ~~that includes~~ comprising:

~~[[a)]~~ one or more than one roll for crushing a feed material, the roll or rolls ~~having~~ comprising an outer surface ~~that is~~ formed from a wear resistant material;

[[b)] a means for depositing a hard facing material onto the surface of the roll or rolls as the roll or rolls rotate during a crushing operation; and

[[c)] a means for monitoring the surface of the roll or rolls ~~wherein the roll surface monitoring means including~~ comprising a laser optical continuous monitoring means that includes a laser system mounted on a frame arranged to ~~minimise~~ minimize vibrations.

Claim 20 (Currently Amended): A roll crusher assembly for use in the mining industry, ~~that includes~~ comprising:

[[a)] one or more than one roll for crushing a feed material, the roll or rolls ~~having~~ comprising an outer surface ~~that is~~ formed from a wear resistant material;

[[b)] a means for depositing a hard facing material onto the surface of the roll or rolls as the roll or rolls rotate during a crushing operation; and

[[c)] a means for heat treating the deposited hard facing material on the rotating roll or rolls downstream of the hard facing material deposition means in ~~[[the]]~~ a direction of rotation of the roll or rolls.

Claim 21 (New): The roll crusher assembly defined in claim 20, wherein the hard facing material includes any one of:

iron-based alloys containing one or more of the following alloying elements:
chromium, manganese, silicon, tungsten, molybdenum, nickel, and vanadium;

alloys based on one or more of chromium, nickel, cobalt and tungsten; and

composite materials containing particles of hard materials dispersed in a continuous matrix.

Claim 22 (New): The roll crusher assembly defined in claim 20 or claim 21, wherein the means for depositing the hard facing material includes a welding means.

Claim 23 (New): The roll crusher assembly defined in claim 20 or claim 21, wherein the means for depositing the hard facing material includes a welding means that is positioned in relation to the roll or rolls to deposit the hard facing material onto the surface of the roll or rolls as the roll or rolls rotate during the crushing operation.

Claim 24 (New): The roll crusher assembly defined in claim 22, wherein the welding means is an arc welding assembly.

Claim 25 (New): The roll crusher assembly defined in claim 20, wherein the hard facing deposition means is configured to deposit a continuous layer of the hard facing material onto the surface of the roll or rolls.

Claim 26 (New): The roll crusher assembly defined in claim 20, wherein the hard facing deposition means is configured to deposit the hard facing material onto the surface of the roll or rolls only on those sections of the roll or rolls that have become worn to the extent that repair is necessary.

Claim 27 (New): The roll crusher assembly defined in claim 20 wherein the roll or rolls are 1-3m in diameter.

Claim 28 (New): The roll crusher assembly defined in claim 20, further comprising:
a pair of contra-rotating rolls that have a gap therebetween, and

a means for varying the gap whereby absolute precision is not necessary with respect to a thickness of the hard facing material on the surfaces of the rolls, wherein all of the roll surfaces that require protection are protected by the hard facing material, and
an excessive build up of material over time is precluded.

Claim 29 (New): The roll crusher assembly defined in claim 20, wherein the roll surface monitoring means determines the extent of wear on the surface of the roll or rolls.

Claim 30 (New): The roll crusher assembly defined in claim 20, wherein the hard facing deposition means is responsive to the roll surface monitoring means and actuates the hard facing deposition means to deposit the hard facing material onto worn sections of the roll or rolls.

Claim 31 (New): The roll crusher assembly defined in claim 20, further comprising:
a means for cleaning the surface of the rotating roll or rolls upstream of the hard facing deposition means in a direction of rotation of the roll or rolls.

Claim 32 (New): A method of repairing a roll or rolls of the roll crush assembly defined in claim 20, comprising:

monitoring the surface of the roll or rolls,
determining an extent of wear on the surface of the roll or rolls,
identifying worn sections of the roll or rolls, and
depositing the hard facing material onto the worn roll sections.